

REMARKS

Claims 52-68 are currently pending in this Application. Claims 52, 55, and 68 have been amended with this Response.

Objections to the claims

The claims are objected to for various informalities. In response, Applicant respectfully amends the claims and points out that there are no instances of the term “set-up” in the claims.

Claim Rejections Under 35 U.S.C. §102(b)

Claims 52-55, 58, 59, 62, 66-68 are rejected under 35 U.S.C. §102(b) as being anticipated by United States Patent No. 5,738,104 to Lo (hereinafter “Lo”). Applicant respectfully traverses the rejections.

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. V. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

Applicant’s claims 52 and 68 recite, *inter alia*,

“a set-up mode and in a use mode, *said set-up mode being distinct from said use mode*,

and wherein, in said set-up mode, said apparatus is user controllable to receive as a first reference input signals from said means for providing signals which are indicative of said other muscle activity and to *separately* receive second reference input signals from said means for providing signals which are indicative of said particular muscle activity,

and wherein said apparatus is configured in said set-up mode to process said first reference signals and said second reference signals to identify therefrom at least one distinguishing criterion which differentiates said first reference input signals from said second reference input signals.”

Lo does not teach a set-up mode that is distinct from a use mode, or controllability that allows first reference input signals to be received separately from second reference input signals.

In lo, the user initiates the use of the device by making body contact with the electrode contacts of the device. Since the Lo device is a heart rate monitor for exercise monitoring, this will typically occur when the user is exercising and is therefore making certain muscle actions, like running. The task of the Lo device is to discriminate between EKG heart rate signals and EMG muscle generated background signals.

During use of the Lo et al device, both the signals that are to be recognized and the confounding signals *will be received at the same time*. Clearly the heart rate EKG signals will be received all the time, and if the user is exercising there will be an always present if varying background. As such, there is no provision taught in Lo for a set-up mode in which the EKG signals can be received separately from the background EMG signals so that the apparatus can “process said first reference signals and said second reference signals to identify therefrom at least one distinguishing criterion which differentiates said first reference input signals from said second reference input signals,” as is required by claims 52 and 68.

Lo, on the other hand, teaches the differences between the received EKG signals and the EMG signals to be previously established and ‘built in’ to the processing of the device as a basis for discrimination. This is in contrast to that which is recited in Applicant’s claim 52, where no such previously established differences are required. Instead, the *separate inputting* of the ‘relevant’ second reference input signals and the

‘confounding’ first reference input signals enables the apparatus to process both types of signals so as to identify from the actual signals obtained from the individual user a relevant distinguishing criterion.

Accordingly, Lo teaches non-set-up processes wherein differentiation takes place continuously and throughout usage of the device. For example, Lo et al teaches a first and a second signal processing scheme, wherein the second scheme adds a supplementary template matching scheme to the first scheme, which itself relies on certain pre-set manipulations of the signals designed to eliminate the confounding EMG signals. As described with reference to Figure 7 starting at column 7, line 30, and particularly with reference to Figure 11 at column 12, line 54, Lo relies on processing all the signals received during use by a process of differentiation, squaring, and moving average determination. This is a process that does not rely on any difference between the EKG and EMG signals learnt during a preceding *distinct* user specific set-up mode.

In another example, the steps set out in Figure 11 of Lo teach the mathematical expressions of Figure 13 to 16. According to column 16, line 33 onwards, the processing shown in Figure 7 has the effect of removing artifacts and noise and enhancing peaks likely to be actual EKG waveforms. If desired, according to Lo, one can additionally treat the signals by a template matching step. As per column 16, line 49 onwards, this suppresses peaks that do not match a template shape. The template shape will in the first instance be predetermined, not deduced from a comparison of ‘relevant’ and ‘confounding’ signals separately acquired in a set-up mode.

In still another example, Lo teaches certain learning routines that take place during the use of the device to improve its performance. As described at column 19, line 14 onwards, the received signals are processed as per Figure 7 and then the processed signals identified as heart rate signals are subjected to certain tests for reasonableness, leading to resetting certain thresholds and coefficients used in the Figure 7 processing (as per column 14, line 55).

However, as mentioned above, none of these exemplary processes of Lo take place in a set-up mode. Rather, the processes are continuous and ongoing throughout usage of the device.

With specific reference to the Examiner's assertion (please see page 8 of the Office Action) that Lo is controllable to receive first and second input signals, Applicant respectfully notes that Column 7, lines 34-36 of Lo teaches that the user places his or her fingers on the contact electrodes to provide the signals necessary to measure the pulse rate of the user. Though this passage teaches a controllability that allows the Lo device to receive both the heart EKG signals and the background EMG, these signals are necessarily mixed and received together. Placement of a user's fingers on the contact electrodes provides no possibility of the device receiving the signals representing the particular muscle activity (which in Lo et al would be heart muscle activity) and the signals representing other muscle activity, such that these signals could be separately registered as first and second reference input signals for future processing with a view to identifying some distinguishing criterion therein. Accordingly, the Lo device is not controllable to receive each signal as a separate reference input for purposes of comparison, as is required by Applicant's claims.

In fact, Lo does not teach any acquisition of “*reference* input signals” at all. On the contrary, the signals analyzed in Lo are all actual use signals. This follows of course from the fact that the device is a heart rate monitor, and thus, a user cannot avoid presenting the heart rate signals whenever the device is in operation.

The operation required by claim 52 is quite different. As mentioned above, before the apparatus is used, the apparatus is required to be operable in a set-up mode in which it receives signals produced by the other muscle activity to be used as a first reference. It also receives signals produced by the particular muscle activities that are to be used as a second reference. While it is not important in which order these reference signal gathering

steps take place, they clearly have to be separate so that the two kinds of signals can be received and identified as being of the relevant kind.

The Examiner has identified the EMG and EKG signals received during the use of the Lo device as the first and second reference signals required by the claims. However, these EMG and EKG signals *are not “reference signals,”* as they are not received during a set-up mode phase of operation. The Lo signals are all received during actual usage, and thus, no signals are used in a set-up mode in Lo to identify therefrom an identifying criterion which is then applied in a use mode to determine whether signals received in the use mode have the distinguishing criterion.

With additional and specific reference to the Examiner’s assertion (please see page 8 of the Office Action) that Applicant’s claim recitation of the apparatus being controllable to receive a first reference input signal and a second reference input signal is a recitation of intended use (and therefore must result in a structural difference in order to patentably distinguish), Applicant respectfully traverses.

The recitation that Applicant’s apparatus/element is user controllable to receive as a first reference input signals is not merely a statement of intended use. Claim 52 requires that the apparatus is operable in a set-up mode and in a use mode and specifies what is to happen in these respective modes. This is a structural requirement by nature. It is not just the intention that the apparatus should be used in the set-up mode and then in the use mode. Rather, it is required that the apparatus be structurally configured to function in such a manner.

Nothing in Lo et al suggests that the device they describe is capable of being used in a set-up mode and then in a use mode, or that in a set-up mode, the device should be capable of being used to *separately* register/receive signals from one particular muscle activity and signals from some other muscle activity. To be able to have such a capability would require the device to have a structural means for switching between two signal

receiving states, either manually or as part of an automatic set-up routine. Nothing of the kind is taught in Lo.

For at least the above reasons, Applicant respectfully asserts that Lo does not teach every element of Applicant's claims 52 and 68, or claims 53-55, 58, 59, 62, 66-67 that depend from 52.

Since Lo fails to teach or suggest all of the limitations of claims 52-55, 58, 59, 62, 66-68, Applicant respectfully submits that claims 52-55, 58, 59, 62, 66-68 are not anticipated by Lo.

Applicant also respectfully notes that though the Examiner has also commented that Applicant has sought to argue on the basis of features (e.g. bruxism monitoring) that are not in the relevant claims, Applicant actually made reference to such features merely by way of exemplification, so as to ease understanding of how the claim language relates to the specific embodiment.

Claims 52-59, 62, 63, 65, 67 and 68 are rejected under 35 U.S.C. §102(b) as being anticipated by United States Patent No. 4,669,477 to Ober (hereinafter “Ober”). Applicant respectfully traverses the rejections.

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. V. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

Applicant's claims 52 and 68 recite, *inter alia*,

“a set-up mode and in a use mode, *said set-up mode being distinct from said use mode,*

and wherein, in said set-up mode, said apparatus is user controllable to receive as a first reference input signals from said means for providing signals which are indicative of said other muscle activity and to *separately* receive second reference input signals from said means for providing signals which are indicative of said particular muscle activity,

and wherein said apparatus is configured in said set-up mode to process said first reference signals and said second reference signals to identify therefrom at least one distinguishing criterion which differentiates said first reference input signals from said second reference input signals.”

Applicant first notes that it has been previously argued that Ober does not disclose a device that has a set-up mode in which it receives first reference input signals and second reference input signals. In response to Applicant’s assertion, Applicant respectfully points out that the Examiner has alleged that in Ober, signals above a threshold can constitute the second reference input signals that are representative of the particular muscle activity to be detected (bruxism), and signals below that threshold can constitute the first reference input signals that are representative of other muscle activity.

However, Applicant further and respectfully asserts that if one were to identify the relevant first and second reference input signals of Ober in the manner in which the Examiner proposes, it would be respectfully impossible for the signals to be used in the device in the manner required by Applicant’s claim 52. This is because the Ober device does not of course process the above threshold signals and the below threshold signals to identify a characteristic that enables these signals *to be distinguished from one another*. The threshold level is not something obtained from the two kinds of signals in Ober as it would be required to be if it were to be the “distinguishing criterion” of claim 52.

Whereas according to claim 52, the distinguishing criterion is to be identified in the apparatus from the two *different, separate* signals received in the set-up mode, in Ober the threshold is just set by the user via a turning the control knob 32. Accordingly, the Ober signals are NOT received and processed in a set-up mode for any purpose, let alone as specified in claim 52.

Respectfully, in the absence of a set-up mode, the Ober device lacks any features that could even be implied as configured to process first reference input signals and second reference input signals to identify a distinguishing criterion. If one identifies the two kinds of signals as above threshold and below threshold signals, it would remain true that Ober's device lacks any provision in the device for comparing the two kinds of signals to identify a distinguishing criterion.

Applicant also respectfully notes that though the Examiner has also commented that Applicant has sought to argue on the basis of features (e.g. bruxism monitoring) that are not in the relevant claims. Applicant specifically and respectfully refers the Examiner's discussion of the concept of frequency analysis. Applicant respectfully notes that the previous Response stated that 'exemplary embodiments of the Applicant's apparatus perform frequency analysis'. It was not suggested or argued that this was a claim feature. Rather, Applicant merely submitted that Ober did not disclose any identification of a distinguishing criterion from two different reference signals. Applicant then respectfully explained why a modification of Ober's device would be inoperative if one were to attempt to apply the threshold idea in the form of a comparison between reference signals of the kind used in the Applicant's specific embodiment. Regardless, Applicant continues to respectfully submit that Ober, like Lo, fails to disclose a relevant set-up mode with gathering of two different kinds of signals as references followed by processing of the two signals to identify a relevant difference between them.

For at least the above reasons, Applicant respectfully asserts that Ober does not teach every element of Applicant's claims 52 and 68, or claims 53-55, 58, 59, 62, 66-67 that depend from 52.

Since Ober fails to teach or suggest all of the limitations of claims 52-55, 58, 59, 62, 66-68, Applicant respectfully submits that claims 52-55, 58, 59, 62, 66-68 are not anticipated by Ober.

Claim Rejections Under 35 U.S.C. §103(a)

Claims 60, 61, 64, and 66 are rejected under 35 U.S.C. §103(a) as being unpatentable over Ober in view of various combinations United States Patent No. 6,636,763 to Junker (hereinafter "Junker"), United States Patent No. 4,993,423 to Stice (hereinafter "Stice"), and United States Patent No. 5,368,043 to Sunouchi (hereinafter "Sunouchi"). Applicant respectfully traverses the rejections.

Applicant respectfully notes that claims 60, 61, 64, and 66 depend from claim 52. As such, for at least the reasons discussed in the 102 remarks, Ober does not teach every element of claims 60, 61, 64, and 66. Since none of Junker, Stice, or Sunouchi, taken alone or in combination remedy the deficiencies of Ober, any proposed combination of Ober, Junker, Stice, and Sunouchi does not teach every element of Applicant's claims 60, 61, 64, and 66. Thus, Applicant respectfully asserts that claims 60, 61, 64, and 66 are not obvious over any proposed combination of Ober, Junker, Stice, and Sunouchi. Further, as any proposed combination of Ober, Junker, Stice, and Sunouchi does not teach every element of Applicant's claims, combination or modification of the above references would not be obvious, or offer any reasonable chance of success.

Conclusion

All of the objections and rejections are herein overcome. In view of the foregoing, it is respectfully submitted that the instant application is in condition for allowance. No new matter is added by way of the present Amendments and Remarks, as support is found throughout the original filed specification, claims and drawings. Prompt issuance of Notice of Allowance is respectfully requested.

The Examiner is invited to contact Applicant's attorney at the below listed phone number regarding this response or otherwise concerning the present application.

Applicant hereby petitions for any necessary extension of time required under 37 C.F.R. 1.136(a) or 1.136(b) which may be required for entry and consideration of the present Reply.

If there are any charges due with respect to this Amendment or otherwise, please charge them to Deposit Account No. 06-1130 maintained by Applicant's attorneys.

Respectfully submitted,

CANTOR COLBURN LLP

By: /Daniel R. Gibson/
Daniel R. Gibson
Registration No. 56,539
Cantor Colburn LLP
20 Church Street
22nd Floor
Hartford, CT 06103
Telephone: 860-286-2929
Facsimile: 860-286-0115
Customer No. 23413

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